Article

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BEPS Policy Failure—The Case of EU Country-By-Country Reporting[1]

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Abstract: The tax gap between taxes that are "actually" paid and taxes that "ought" to have been paid by multinational corporate entities has become an area of huge public policy concern in the recent decades. This study reviews the impact of new legislation to reveal the tax gap created by the EU banks and financial institutions passed in 2013 and in particular of the quality of the resulting country-by-country reporting (CBCR) requirement for banks. Although resulting tax gap estimates are noted, they suffer due to significant problems in the published data; much of it is due to the quality of the regulation requiring its publication and implementation. The findings reveal a lack of understanding of the technical and structural weaknesses of accounting in a transnational context in the design of this regulation. CBCR is destined to fail in achieving its regulatory objectives in this context unless necessary reform of the regulation is undertaken.

Keywords: Tax gaps; Tax avoidance; Accounting; Policy-making; Country-by-country reporting; CRD IV

1 Introduction

In 2013, the European Union included a requirement that the EU-based banks publish a limited form of country-by-country reporting (CBCR) in the revised Capital Requirements Directive IV (CRD IV) [15]. As noted in this article, the objective was to "allow stakeholders to gain a better understanding of the structures of financial groups, their activities, and geographical presence and help to understand whether taxes are being paid where the actual business activity takes place" [18]. The initial objective of the research that underpins this article was to test whether this objective could be fulfilled by checking whether reliable estimates of profit misallocation by the reporting banks could be prepared based on the data they published. The objective appeared reasonable, given the stated objective of CRD IV in this regard. In practice, this research objective could not be fulfilled as planned: the data published as a result of the CRD IV requirements could not support that objective. This article explores how and why this happened, and what can be done about it.

Global corporations, and their growth in power and dominance, have raised increasing concerns among academic researchers [2, 25] and a whole field of corporate governance research has emerged in the past two decades [32, see, *e.g.*]. This research suggests that in their efforts to externalize costs, firms have been determined to reduce taxes, seeing taxation as a major burden and cost to the business, rather than an opportunity to repay states for vital infrastructure services and legal protections [2, 6, 56]. In a similar vein, their power has increasingly led to corporate boards seeing regulations of any kind as a cost or a burden to their profit-making purpose [30], and firms have actively shopped globally for minimal regulations and constraints [51]. This has eroded the tax base of countries and led to a race to the bottom.

Given the significant rates of corporation taxes charged on company profits, ranging from 0% to more than 40% of profits [31], these taxes have been a key target for minimization. Organizations such as Tax Justice Network [56] and movements such as Occupy Wall Street have had a significant impact in exposing the significant levels of corporate tax avoidance through media outlets and by direct campaigns and public rallies. They have suggested that income from high-tax jurisdictions is being shifted to low-tax jurisdictions, making it very difficult for nation states to collect fair taxes—leading to a major "tax gap" [47]. As a result, transnational regulatory organizations

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have been pressurized to respond. Under instruction from the G20 and G8, the Organization for Economic Cooperation and Development (OECD) took charge of the initiative to tackle global tax avoidance, through the base erosion and profit-shifting (BEPS) initiative [9, 39, 40]. The primary purpose of this exercise was to identify the levels of such tax avoidance and the locations used to pursue it and to use the resulting transparency to encourage local tax authorities to effectively police and recover taxes that should legitimately fall due within their jurisdictions.

Among the measures adopted as a part of the BEPS process was a form of CBCR [40]. This was explicitly derived from recommendations made by civil society groups [33, 37]. In this context, it is important to note that CBCR is based on accounting and not tax data [37]. The purpose of CBCR is to indicate whether the risk of BEPS exists and not to, in itself, be the basis for taxation assessment. That said, there is now a growing awareness that accounting data based on most existing accounting standards, including those issued by the International Financial Reporting Standard Foundation that are used by most multinational corporations, are not suitable for the appraisal of many taxation issues [53]. This is partly by design: the International Financial Reporting Standard foundation states that they are not intended for this purpose [26, para 1.10]. This might explain why every country adjusts accounting numbers when determining tax charges [53]. The issue is compounded by the fact that accounting rules and practices also vary internationally and that even where there are international standards, their interpretation is often variable, making the implementation and enforcement of tax rules, technically very complex and difficult to enforce [48, 53]. The consequence is that there are very serious and frequently intractable technical problems in determining what a fair taxation liability for a multinational corporation might be, and how this can be apportioned among states in an equitable manner. As a result Sikka and Murphy [53] proposed a whole new conceptual framework for tax accounting, something that has never been attempted before. In the current and likely continuing absence of the adoption of such a standard, there are serious problems for the enforcement of tax rules, given the power and resources of these giant corporations and the lack of any global tax monitoring authority. The chance of CBCR succeeding has, then, to be appraised within this context. CBCR combines financial reporting with a tax methodology in an attempt to identify the consequences of BEPS. What it cannot do is overcome the inherent deficits in the accounting of a multinational corporation if that accounting data are in itself not fit for tax reporting purposes. Although similar point has been made elsewhere [*e.g.* 19], our additional contribution is in using specific data from reports published by banks for the period 2013–2017. This research shows how these deficits were ignored in the policy design stage, leading to a significantly detrimental outcome from a regulatory and enforcement perspective.

In the light of these various concerns, this article addresses two issues and then outlines the research method adopted. The first is the development of CBCR and the motivations for it, including the appraisal of tax gaps. Next, it considers the motivation for the adoption of CBCR by regulatory authorities, concentrating in particular on the use made of it by the European Union to appraise the tax affairs of banks. The research method and objectives for the third and final part are then outlined. The findings from the research reveal significant problems with the new disclosures and their accuracy and reliability. The quality of the data published as a result of the EU regulation and the failings within it are considered before; lastly, conclusions are drawn on the apparent failure of this process to date.

2 About country-by-country reporting—origins and purpose

The perception of a rising global tax gap between the corporate tax that should have been collected and tax that was actually paid, and evidence that developing countries are adversely impacted by the aggressive behavior of multinational corporations, led to calls for CBCR [33–35]. A form of CBCR was proposed by the United Nations in the 1970s but fell by the wayside under pressure from the Organization for Economic Cooperation and Development [12, 59]. The idea was independently revived in a new form in 2003 as a means of revealing the financial performance of a multinational corporation in each country in which it operated, something which was not then (or now) reported in the annual financial statements of those corporations [33, 36]. This most elementary form of accountability was strongly resisted by accounting standards setters [58].

It was hoped that this transparency of information would lead to better knowledge and empowerment for local tax authorities, especially in developing countries, to collect taxes that were rightly due to them [36]. Accounting was seen in this context as a tool for better tax enforcement and regulation despite the general problem with transparency regimes in achieving behavioral change [21]. One of the first global initiatives to require such transparency was created by the European Union in 2013 as part of the Capital Requirements Directive IV (CRD IV) regulations that were intended to improve the ability of the European

banks to survive another global financial crisis [15]. Given the hopes and aspirations for that regulation, the present study was conducted to analyze the information revealed and to see whether substantial tax gaps were revealed.

The original intention of the research that underpins this article was to deliver a measure of the corporation tax gap estimated based on the reporting of major EU banks required under Article 89 of the CRD IV of the European Union that was adopted in June 2013 [15]. The objective of CRD IV was to "lay down rules concerning … access to the activity of credit institutions and investment firms [and to provide] supervisory powers and tools for the prudential supervision of [these] institutions by competent authorities" [15, Article 1]. In the process of doing so, the European Union included provision that the regulated institutions should

> disclose annually, specifying, by Member State and by third country in which it has an establishment, the following information on a consolidated basis for the financial year (a) name(s), nature of activities and geographical location; (b) turnover; (c) number of employees on a full time equivalent basis; (d) profit or loss before tax; (e) tax on profit or loss; (f) public subsidies received. [15, Article 89].

Their stated purpose in creating this legislation was to

> allow stakeholders to gain a better understanding of the structures of financial groups, their activities and geographical presence and help to understand whether taxes are being paid where the actual business activity takes place. Mandatory country-by-country reporting is an important element of the corporate responsibility of institutions towards stakeholders and society and will help to restore trust in the banking sector. [18].

In that context, the original objective of this work can be seen as being consistent with the stated policy objective for the CRD IV Article 89 disclosures. The rationale stated by the European Union is based on the transparency and corporate responsibility, with restoring trust thrown into the mix, although no mention is made in the legislation on how this will be monitored and enforced and what the penalties are for noncompliance with CBCR requirements.

The research objective was then to calculate a "tax gap" estimate for each country for which reporting was made based on the principles of unitary taxation. Unitary taxation apportions the total group profit of a multinational corporation to jurisdictions based on a formula [11, 46, 47]. The classic apportionment formula used in unitary taxation is described as the Massachusetts apportionment [11]. This apportions total group profit based on a formula that gives equal weighting to third-party sales, number of employees, and assets in a location. CBCR was designed to provide the information for this purpose. Proponents of both CBCR and unitary taxation suggest that unitary taxation is a more equitable method of apportioning the total taxable profits of a multinational corporation to the locations where it trades than that offered by the arm's length pricing methodology OECD [49]. Although the use of unitary taxation has not been agreed upon by any global body, it was felt that CBCR information would both open the way toward global unitary taxation and achieve a reduction of tax avoidance and the tax gap relating to corporation tax in the meantime. As such there were significant hopes for this regulation at the time that it was enacted. Given how recent this data set is, there is hitherto little research on the implications of this new evidence.

3 Questioning reform motivations—oecd and eu policy-making "on the hoof"

The global regulation of tax has been a complex arena, with no central power or authority to codify, enforce, and punish tax evaders and avoiders [46]. The OECD initiative on BEPS was set against this background [39]. The demand for reform needs to be understood in the context of the period. In December 2012, the UK House of Commons Public Accounts Committee held public, and humiliating hearings into the tax affairs of Google, Amazon, and Starbucks [45], which were widely covered in the global media. Prime Minister Cameron responded to the subsequent public outrage in a speech at the World Economic Forum in January 2013 in which he promised action [10]. The response was the adoption, largely under pressure from the UK development NGOs, of a call for CBCR in the communiqué of the G8 Summit held at Lough Erne, Northern Ireland, in June 2013 [23], although, as was apparent at the time, there was little real understanding of what this meant [3].

The European Union was also very concerned about the tax practices of multinational corporations. Its original focus was on tax payments in the extractive industries [58, p. 1177], and directives requiring limited disclosures on a CBCR for that sector were passed in June 2013 [16, 17]. On the same day as these were passed, the European Union was also considering the revised Capital Requirements Directive (CRD IV) for banks and other financial institutions and intermediaries. Almost as an afterthought, in great

haste, and with almost no consultation,[1] a limited form of CBCR was added to that directive [58]. That those responsible for the regulation had little apparent understanding of the demands that it gave rise to, which is apparent from the requirement imposed that subsidies from government be reported by the institutions covered by the Capital Requirements Directive. The requirement to disclose subsidies was important in the extractive industries but makes almost no sense in banking, where they are almost unknown.[2] There was no guidance in CRD IV on how these requirements were to be interpreted. This has given rise to significant problems, as noted later in this article.

There were skeptics of this CBCR and its effectiveness from the outset. Evers *et al.* [19] demonstrated that neither consolidated or individual financial statements nor other existing data sources seem to be an appropriate basis for providing such country-specific information. They identified technical flaws in the quality and reliability of data, which would hamper effective tax policing. They also questioned the lack of a theoretical foundation in the definition of CBCR and the benefits of this information would not outweigh the costs of gathering and monitoring the information. Instead, Evers *et al.* [19] suggested that tax legislators should limit profit-shifting by enforcing tax rules and closing gaps in tax law. The evidence now available is that at least some of their data concerns may have been justified, and this is discussed below.

Other recent researches have investigated effects of the implementation of CRD IV on banks. It suggests an increase in taxes paid, a decrease in profit-shifting, and no change in returns. While recent evidence by Overesch and Wolff [43] suggested that European multinational banks increased their tax expenses relative to unaffected other banks after CBCR became mandatory and Joshi *et al.* [29] found a significant decrease in the income-shifting activities by the financial affiliates in the post-adoption period, Dutt *et al.* [14] did not find significant abnormal returns for the banks affected by the political decision to include a CBCR obligation. Brown *et al.* [7] investigated the CBCR data and found that there is evidence of abnormal revenues and wages in tax havens, something that we would expect to see in Groups practicing tax avoidance—CBCR exposes the scale and existence of tax havens, information that was not available before. Fatica and Gregori [20] used the CRD IV data and found that the bulk of profit-shifting takes place among subsidiaries, as foreign-to-foreign tax differences matter significantly more that home-to-foreign differentials. What is different about the present study is that it examines in detail the quality of data provided by CBCR and finds this to be seriously flawed and unreliable in a variety of ways.

4 Research objectives and method

The aim of the current research was not to test whether or not each bank for which a report could be located had profit shifted, or not. It was, instead, to test whether or not there appears to be systemic evidence of misreporting of tax liabilities by the banks subject to the CRD IV regime, which the European Union has implied that the data should make possible [18]. To test this hypothesis, a data set developed by a team of researchers at the Czech Republic's Charles University has been used. These data collated the Article 89, CRD IV reports published by 46 different banks for a period of 5 years (2013–2017, although not all published reports for 2013). These data have already been reported on for other purposes [27] and the data are publicly available online via Open Knowledge International [42]. This specific data set is similar to some previously used data sets such as those used by Bouvatier *et al.* [8], Fatica and Gregori [20], Oxfam [44] but is larger in terms of years and banks covered. The banks used for research purposes are listed in Table 1. It will be noted that some banks from the ranking are not included in the data set: despite best efforts, their CRD IV data could not be found on public record despite the fact that it is a legal requirement that this information be published: it would appear that they have chosen not to comply.

To test the hypothesis, a form of formula apportionment was applied to the data published by the banks sampled to determine whether their profit reporting appeared to be consistent with the location of the economic substance of their activities. If it was consistent, it was presumed that base erosion and profit-shifting was not taking place, and vice versa. As, however, the CRD IV Directive only reports information on some of the variables required for unitary apportionment based on the Massachusetts formula, a restricted form of unitary apportionment had to be undertaken. For example, the data published on turnover are in total, and not for third party sales as would ideally be required for formula apportionment, and there is no as-

1 One of the authors of this paper, Richard Murphy, was telephoned by an MEP involved in negotiations the night before this Directive was passed to ask what should be included in it as the opportunity for enactment had arisen that day.

2 Richard Murphy recalls asking for this requirement to be replaced with one requiring disclosure of net assets invested by country, but was told change was not possible given the timescale involved and that any disclosure should be accepted as being better than none.

Table 1: Banks in the data with a ranking according to the largest banks in Europe by total assets in 2017

Banks	Ranking	Banks	Ranking
HSBC Holdings plc	1	ABN AMRO Group NV	26
BNP Paribas SA	2	KBC Group NV	28
Crédit Agricole Group	3	Svenska Handelsbanken AB	29
Deutsche Bank AG	4	DNB ASA	30
Banco Santander SA	5	Nationwide Building Society	31
Barclays Plc	6	Skandinaviska Enskilda Banken AB	32
Société Générale SA	7	Landesbank Baden-Wuerttemberg	33
Groupe BPCE	8	Swedbank AB	35
Lloyds Banking Group Plc	9	Banco de Sabadell SA	36
ING Groep NV	10	Bankia SA	37
UniCredit SpA	11	Erste Group Bank AG	38
Royal Bank of Scotland Group Plc	12	Bayerische Landesbank	39
Intesa Sanpaolo SpA	13	Dexia SA	43
Crédit Mutuel Group	14	Belfius Banque SA	44
UBS Group AG	15	Norddeutsche Landesbank Girozentrale	45
Credit Suisse Group AG	16	Landesbank Hessen-Thueringen Girozentrale	47
Banco Bilbao Vizcaya Argentaria SA	17	Banca Monte dei Paschi di Siena SpA	49
Rabobank	18	Allied Irish Banks Plc	>50
Nordea Bank AB	19	Banco Popular Espanol SA	>50
Standard Chartered Plc	20	DekaBank	>50
DZ Bank AG	21	KfW	>50
Danske Bank A/S	22	NIBC Bank NV	>50
Commerzbank AG	23	Ralffeisen Bank International AG	>50

Source: Janský [27]; ranking by S&P Global Market Intelligence [50].

set data required by CRD IV. However, this still permits a formula apportionment: if equal weighting is given to the two variables on the economic substance of activities for which data are available (turnover and full time equivalent employees), then the European Union's objective of "*understand[ing] whether taxes are being paid where the actual business activity takes place*" is capable of being tested. It is this methodology that the empirical research reported in this article is based upon.

The basis of calculation used was to collect the data for all banks and to then aggregate this, that is, the variables reported by each bank for each country in which they operated were aggregated for each year to create aggregated totals for all banks in the sample by country by year. An average of these totals by country was then prepared by totaling the yearly data and dividing by five. The logic for doing this was to overcome the issues noted with tax liability reporting being on inconsistent cash and accruals bases. Over time, tax paid on a cash basis should approximate to tax accrued if the accrual reporting is accurate: the averaging process over a reasonable time period should, then, have eliminated, as far as was possible, the impact of the apparent data disparities arising because of poor regulation. The process is, then, intended to improve the quality of conclusions drawn. The resulting averaged aggregated data were then reapportioned to countries based on a restricted unitary apportionment formula. This apportioned profits to states with half the allocation being based on the location of turnover and half on the location of staff. The resulting profit was then compared with the reported aggregate average profit for the jurisdiction to note a gross reallocation. This was then subject to valuation for tax purposes at the headline rate of tax applicable in the country in question or as otherwise noted below.

5 Findings: technical problems of data accuracy and reliability and diverse interpretations of CBCR

The data were initially sorted for the purposes of the research by bank and then by year. What quickly became apparent was that there were significant issues with the

data. Three problems appeared most important. The first was that in some, but not all, cases, the turnover and profit data reported were inconsistent with that reported by the entity as a whole. This was because what might be termed a "bottom-up" basis for disclosure has been adopted by some, but not all, banks reporting Article 89 CRD IV data. When this approach has been adopted, the local accounts of the bank in question have been used as the basis for CRD IV reporting purposes, that is, this approach starts with subsidiary level reporting and uses that as the basis for CBCR . This, however, often results in intra-group transactions being reported more than once, usually because profit distributions from companies low in the corporate hierarchy reappear as income received, and so as profit arising, when accounted for in intermediate holding companies. These intermediate holding companies are common in some locations, such as Luxembourg, for example[3]. This double counting of income would be cancelled and eliminated from view when preparing the group consolidated accounts but is accounted for more than once in CRD IV reporting when that is prepared on this "bottom-up" basis. The double-counting makes the country turnover data at best unreliable and at worst exaggerated.

This has in turn given rise to a second problem. This is the tendency of some banks to report profits or losses as arising in "other," unspecified, jurisdictions for CRD IV reporting purposes. It is of course possible that some disclosures described as such may actually refer to otherwise unspecified locations, for example, those that the bank in question consider immaterial for separate reporting, even though this appears contrary to the requirements of CRD IV. More likely, these disclosures might also represent (or do at least approximate to) the income that is potentially double counted that the "bottom-up" basis of preparation gives rise to, as previously noted. Overall the aggregate disclosure does appear to suggest this, but this cannot be confirmed on a bank-by-bank basis.

The third issue is that there has been a difference in interpretation between countries when transcribing into local legislation the CRD IV requirement that tax on profit or loss be disclosed. For example, the United Kingdom interpreted this demand as requiring the disclosure of cash paid in settlement of corporation tax liabilities during the course of the year, following a precedent set by the European Union when previously requiring CBCR for companies operating in the extractive industries. Other countries, such as France, more reasonably interpreted this demand as requiring the disclosure of the corporation tax liability that might be owed in respect of profits declared during the course of a reporting period. The difference is significant: most of the corporation tax paid during the course of any accounting period relates to profits arising in earlier periods and this sum will, therefore, not relate to the profit declared in the current period. The cash paid in respect of corporation tax during a period might then be significantly different to the sum that might be due on the profits arising during the course of the period in question.

The consequence of these differences is that a lack of comparability arises for three reasons. First, the tax paid declared in some countries cannot be readily compared with the profits declared in those same countries because they are stated on different accounting bases. This problem is exacerbated in those locations, such as the Nordic states, where as Table 2 shows, tax reported for CRD IV purposes is as disclosed in the income statement of the reporting bank, meaning that the disclosure in question includes deferred tax provisions, whereas reporting in the United Kingdom is intended to exclude such items but clearly does not always do so despite that fact, as the reporting of Standard Chartered and the Nationwide Building Society reveals. Consistency to ensure comparability is a key quality required of all accounting data, and it is absent in these cases. It is possible that aggregation for a period of time should eliminate at least some of these differences, although this cannot be guaranteed, most especially if losses also arise during a period. Second, comparison of Article 89 CRD IV data among countries where differing bases of accounting apply is not necessarily possible in this case, making the drawing of conclusions from this information much harder. Third, because tax reporting in company accounts is always undertaken, in the first instance, by comparing liabilities owed in respect of the period on profits arising during the course of that same period, there is, as a result of this reporting anomaly, a risk that the CRD IV reporting of banks in places such as the United Kingdom might not compare with the audited financial results of the banks in question in such places. This risk also arises when a "bottom-up" basis for reporting, starting with local accounts rather than from group consolidated accounts, is used.

It is stressed that these various bases of reporting are not, in themselves, wrong. A top-down approach has merit in offering a readily transparent reconciliation with the published audited accounts, while, in contrast, a bottom-

3 This is an issue noted from the first time that CRD IV CBCR took place. For example, see Barclays Bank plc 2013 country-by-country report [4] and commentary upon it [38] that highlighted that high levels of turnover reporting in Luxembourg appeared to arise for this reason. It would appear that dividend income of intermediate holding companies is reported as turnover not infrequently.

Table 2: Comparing CRD IV CBCR data with banks' accounts for six UK banks in 2017 — Nordic banks

Banks	Year	Data source	Turnover €m	Profit before tax €m	Tax per profit and loss account €m	Tax paid per cash flow €m	Employees
Danske Bank A/S	2017	CRD IV	10,244	3,533	725	725	19,769
Danske Bank A/S	2017	Accounts	6,473	3,534	724	737	19,768
Danske Bank A/S	2017	Difference	3,771	(1)	1	(12)	1
DNB ASA	2017	CRD IV	5,535	2,877	542	542	9,561
DNB ASA	2017	Accounts	5,487	2,882	542	1,156	9,561
DNB ASA	2017	Difference	48	(5)	(0)	(614)	0
Nordea Bank AB	2017	CRD IV	9,469	3,998	950	950	31,437
Nordea Bank AB	2017	Accounts	9,469	3,998	950	950	30,399
Nordea Bank AB	2017	Difference	0	0	0	0	1,038
Skandinaviska Enskilda Banken AB	2017	CRD IV	7,662	2,161	473	473	15,949
Skandinaviska Enskilda Banken AB	2017	Accounts	4,679	2,160	474	244	15,946
Skandinaviska Enskilda Banken AB	2017	Difference	2,983	1	(1)	229	3
Svenska Handelsbanken AB	2017	CRD IV	4,325	2,182	547	547	11,832
Svenska Handelsbanken AB	2017	Accounts	4,326	2,183	511	594	11,832
Svenska Handelsbanken AB	2017	Difference	(1)	(1)	36	(47)	0
Swedbank AB	2017	CRD IV	4,496	2,548	537	537	14,588
Swedbank AB	2017	Accounts	4,405	2,548	538	386	14,588
Swedbank AB	2017	Difference	91	0	(1)	151	0

Source: Authors, based on the annual published accounts of the group parent companies of the noted banks for 2013 to 2017 inclusive and the CRD IV reporting and of the same banks for those same years if publications were made [27], all values were translated, when necessary, into euros at average exchange rates for the year in question published by Eurostat.

up approach might provide better quality information to assist the appraisal of where the economic substance of transactions really arises, which is the objective of CBCR. Similarly, reporting both tax provisions in a profit and loss account and tax paid is useful, not least because of the comparison between the two that is enabled, although, unfortunately, CRD IV does not require both, unlike the OECD CBCR requirement studied recently by Cobham *et al.* [13] and Garcia Bernardo *et al.* [22]. The point is that there is not error on display here, but that there is instead a lack of precision in defining the required disclosures that has given rise to the preparation of inconsistent data that are undermined the objective of this process, which was to reliably indicate whether profit-shifting was taking place, where and by whom on a consistent and comparable basis. Requiring disclosure of tax provided in both the profit and the loss account and paid as shown by the cash flow, and the reconciliation of other variables to the published accounting data if prepared on a bottom-up basis, would overcome most of these problems. Some banks have appreciated the merits of such reconciliations and voluntarily provide them: Barlcays Bank [5] being a notable example, but the fact that they are an exception does reinforce this point.

To compensate for these issues of comparability, and because companies are required to report the corporation tax that they pay in a period in their cash flow disclosure under International Financial Reporting Standards, it should be expected that the total CRD IV tax cash paid should, on whatever basis it is reported, broadly reconcile with these data in the financial statements instead. To test this last hypothesis, and the potential scale of misreporting that might arise from the use of bottom-up accounting approaches for CBCR, the data reported by both Nordic and the UK banks in their Article 89 CRD IV reports were compared with the similarly described disclosures made in their audited financial statements for the same apparent periods. In each case, the comparison was restricted

Table 2: Comparing CRD IV CBCR data with banks' accounts for six UK banks in 2017 — UK banks

Banks	Year	Data source	Turnover	Profit before tax	Tax per profit and loss account	Tax paid per cash flow report	Full-time employees
			€m	€m	€m	€m	
Barclays Plc	2017	CRD IV	29,599	6,306	487	487	97,418
Barclays Plc	2017	Accounts	24,054	4,041	939	808	79,900
Barclays Plc	2017	Difference	5,545	2,265	(452)	(321)	17,518
Lloyds Banking Group Plc	2017	CRD IV	21,295	6,021	1,172	1,172	69,556
Lloyds Banking Group Plc	2017	Accounts	21,296	6,020	1,427	1,173	69,726
Lloyds Banking Group Plc	2017	Difference	(1)	1	(255)	(1)	(170)
Royal Bank of Scotland Group	2017	CRD IV	14,999	2,567	606	606	73,980
Royal Bank of Scotland Group	2017	Accounts	14,989	2,555	903	593	71,200
Royal Bank of Scotland Group	2017	Difference	10	12	(297)	13	2,780
HSBC Holdings Plc	2017	CRD IV	60,285	14,680	2,371	2,371	233,126
HSBC Holdings Plc	2017	Accounts	44,063	15,227	3,782	2,816	244,788
HSBC Holdings Plc	2017	Difference	16,222	(547)	(1,411)	(445)	(11,662)
Standard Chartered Plc	2017	CRD IV	13,681	3,063	726	726	86,794
Standard Chartered Plc	2017	Accounts	10,865	1,819	727	689	86,794
Standard Chartered Plc	2017	Difference	2,816	1,244	(1)	37	0
Nationwide Building Society	2017	CRD IV	3,855	1,234	339	339	17,295
Nationwide Building Society	2017	Accounts	3,824	1,203	339	339	18,761
Nationwide Building Society	2017	Difference	31	31	0	0	(1,466)

Source: Authors, based on the annual published accounts of the group parent companies of the noted banks for 2013 to 2017 inclusive and the CRD IV reporting and of the same banks for those same years if publications were made [27], all values were translated, when necessary, into euros at average exchange rates for the year in question published by Eurostat.

solely to the matter required to be disclosed by Article 89 reporting. The comparison was undertaken for each year from 2013 onwards if data were available for that year and for 2014–2017 in every case. The complete results are presented in Appendix 1, with that for 2017 being as shown in Table 2, split between the two regions.

As will be noted for 2017, and as Appendix 1 also makes clear for other years, there are differences of significance between the two sources in the case of many of these banks and in both areas. In particular, although it would appear that Nordea Bank, Svenska Handelsbanken, Lloyds Banking Group plc, and the Royal Bank of Scotland Group plc did almost certainly prepare their CRD IV reporting on what might be called a "top-down" basis (*i.e.*, they started from the consolidated accounting data and attributed it to its country of origin) to ensure that the CRD IV disclosures made reconciled almost precisely with their audited accounts, and the Nationwide Building Society, DNB, and Swedbank might also have largely adopted this approach; the other banks that reported appeared not to do so. They did, instead, appear to adopt either a "bottom-up" approach or some other basis of accounting, with what might best be described as substantial differences in overall disclosure between the audited financial statements and the CRD IV reports arising as a result, most especially with regard to the reporting of turnover. These differences appear irreconcilable in some cases based on the disclosures made. It is surprising that, on occasion, these differences even extend to the number of employees. It should be noted that the differences on cash flow should be treated with caution: that in CRD IV, data are taken as being the same as profit and loss data when no other information is available because this disclosure is meant to represent tax paid [18].

As a consequence and in an attempt to counter the resulting possible distortions, a second aggregation was undertaken for the sample of all banks for which data have been collected. This aggregation created a single set of

data for all the banks for all the reporting periods. The resulting effective tax rates reported for each of the 144 jurisdictions (plus one "other" location) for which data were collected is reported by year and in sample aggregate in Appendix 2. As is apparent from that data, the variations in reported effective tax rates implicit in Article 89, CRD IV data are substantial. The effective tax rate is calculated as the ratio of tax declared to declared profits for these purposes. What Appendix 2 also makes clear is that other ratios, such as average turnover per employee and average profit per employee, also produce anachronistic reporting based on these data. Some is due to the small level of activity, but much is not, while the average of more than 12,000 employees located in unknown jurisdictions makes no sense at all.

To check the credibility of reported variations in the calculated rates and effective tax rates, these were compared with two recent publications reporting on those rates. The first was from the OECD, published in January 2019 [41], which data set provides forward-looking or law-based effective tax rates for 70 of the jurisdictions in which banks reported the presence in their CRD IV data. The second, in this case backward-looking or data-based effective tax rates and thus similar to the estimates presented in this article, is by one of the authors of this article [28], which refers only to multinational companies within the European Union and covers the years 2011–2015. For the sake of comparison statutory headline tax rates for all the jurisdictions that had data reported for them by banks subject to Article 89, CRD IV disclosure were also noted. One data source for this was the OECD [41]. Another was the list published by KPMG [31] supplemented where data were missing for jurisdictions for which banks had disclosed data by information produced by other global professional services firms (mainly EY and PricewaterhouseCoopers). The resulting data are noted and compared in Appendix 3. There is surprising alignment between the effective tax rates reported by the OECD and headline tax rates. In contrast, the effective tax rates reported by Janský [28] showed greater variation, with some marked differences on occasion. Those from the CRD IV data appear to bear little relationship to other reported rates in a great many cases: the possible reasons for this have already been noted.

Despite these concerns about data quality, it was decided to prepare tax gap estimates based on the CRD IV data. This was because of the original objective of this work. It was also the purpose for which CBCR was designed [36]. In addition, the European Union had stated that working out whether such gaps might arise was one of their intended purposes that these data were intended to facilitate [18]. The unitary method for apportioning profits to jurisdictions used has already been noted. The tax gap estimate was prepared based on the averaged aggregated (*i.e.*, all bank) data for the 5-year period for which the sample of banks reporting CRD IV data supplied information. These data were used to then suggest average aggregated misallocated profits. To estimate the tax impact of these misallocations across the sample as a whole, headline tax data were used because of the uncertainties and discrepancies noted in effective tax reporting and because effective tax rate data were only available for about half the countries for which data were reported. The effective tax rate data based on CRD IV data appeared too unreliable to use. The OECD reported headline tax rate was the preferred choice of tax rate used for this purpose. When such data were not available a rate secured from KPMG or another professional services firm was used instead. When no rate was available, an average corporate income tax rate of 24%, based on the KPMG data, was used instead. For the sake of comparison, a second tax gap estimate was then prepared for the EU member states alone. In this case, effective tax rate data from Janský [28] were used, with comparison then being made to the tax gap data for those same EU states based on their headline tax rates. To determine tax gaps, profits over- and underreported by jurisdiction are noted separately, which means that the tax gained or lost is noted separately by jurisdiction as a consequence. The results sorted in order of overall tax losses from profit shifting to those gaining from the process are presented in Appendix 4.

As that appendix notes, the process of profit-shifting is, by definition, a zero sum game: the net gains and losses must be equal because it is the profit of a single entity that the unitary apportionment reallocates for the purpose of preparing the tax gap estimate. This, however, is not true of the tax gains and losses resulting from those relocated profits. As expected, the data show that the countries suffering losses from profit-shifting lose more than those gaining appear to win from the process. Using the sample as a whole, and, therefore, by implication relying on headline tax rates to represent effective tax rates, what is surprising is that total losses, expressed in terms of tax revenues, amount to €7.37bn but the gains are not much less, at €6.47bn, implying a net worldwide gain for these banks of approximately €0.9bn as a result. What the evidence from the tax gap estimate for the EU members states does, however, make clear is that using what is thought to be much more credible data on effective tax rates has a significant impact on this calculation. Using headline tax rates, the losses of the EU member states to profit-shifting by the EU banks amounts to €5.31bn and the gain to €3.18bn, at a net cost of €2.13bn. However, when the costs of the

same profit-shifting are estimated using more credible effective tax rates both figures fall to €4.79bn and €1.63bn, respectively, but the net cost rises considerably to €3.16bn as a result. The main impact is to be seen in those locations with superficially high corporation tax rates but low effective rates: Luxembourg is a prime example; it has the third highest overall gain from profit misallocation (being ranked behind Hong Kong and, rather surprisingly, Sweden, in this regard) but a substantial overall difference between nominal and effective tax rates. In this respect, the findings replicate and support those of Brown *et al.* [7].

Overall, it is apparent that some expected jurisdictions, such as Luxembourg, Hong Kong, Belgium, and Ireland, are gaining from profit misallocation, but so are many other states that are not recognized as tax havens. Indeed, many locations thought to be tax havens hardly feature in the misallocations: Jersey is the most notable to do so, while the Cayman Islands and the British Virgin Islands are hardly noticeable, based upon these data. As expected then, CBCR poses as many questions as it answers while unambiguously suggesting that profit-shifting does create significant costs for many states, of which the largest three to suffer are Italy, Spain, and the United Kingdom, in that order. The question remains though as to whether the available data can sustain these conclusions.

6 Summary and discussion

As the evidence presented in this article shows, the objectives stated by the European Union for the CRD IV CBCR disclosures [18] have not been met, at least as they might have desired. It is not possible to reliably appraise whether profits have been appropriately apportioned by the reporting banks to the jurisdictions in which they operate. Most especially, it has not been possible to determine whether tax is appropriately paid by each of them in each such location. This is the consequence of a number of noted failings inherent in the CRD IV regulation and in the way in which it has been implemented by member states and individual banks. As has been noted, some of these failings result from the way in which Article 89 of CRD IV was added to that directive in considerable haste. However, as the noted data on effective tax rates that have also been derived from accounting data also reveal, some of these problems are not peculiar to the CRD IV CBCR data. It would appear that currently available accounting data, and the methods by which it is generated and reported, do not provide sufficiently robust data for the purposes of analyzing the appropriateness of the tax payments made by multinational corporations. These defects could not be overcome by auditing the CRD IV data, or incorporating it into the statutory accounting framework of the companies in question: they are instead implicit in the design of the regulation and the limited scope of the data demanded. Although the motivation of those involved in this process was undoubtedly well intentioned, the outcome was less than optimal.

A number of important lessons need to be drawn from this research. First, those regulating corporate disclosures required for the purposes of appraising the appropriateness of tax payments must understand the need to require sufficient relevant, reliable, comprehensive, and comparable data to ensure that this task can be fulfilled. They must in that case seek to ensure that sufficient data are available for this purpose. The OECD version of CBCR does, for example, include seven key variables to appraise the appropriateness of profit apportionment, including data on the location of tangible asset investment [40]. The inclusion of a more comprehensive data set for CRD IV, when the requirement was already known [33], would have assisted its effectiveness.

Thereafter, it has to be appreciated that securing the regulation is in itself an insufficient process: specific guidance on its interpretation is required to ensure that its consistent application occurs in practice. Failure to do this will guarantee inconsistencies, and so a lack of comparability, within any resulting data because it would seem (as the Nordic and UK case studies included in this article make clear) multinational corporations are inclined to interpret reporting requirements in any way that suits their purpose unless specifically directed in their use.

Third, the CRD IV data did not appoint a regulator to oversee and enforce the quality of the information supplied as a result of the demands made by Article 89. This was an obvious failing, and one that followed on from the extractive industry's directive, that cannot be replicated in any future regulation that shares the objectives of this regulation. A mechanism to monitor reporting and to require its correction has to be established if regulation of this sort is to be effective.

These matters are of current significance: the European Commission still has an extant proposal for the public reporting of CBCR data by all large multinational corporations operating within the European Union. This proposal has been stalled by the European Council at present. The lessons from CRD IV must be taken into account before it progresses further. Effective accounting regulation is essential in the fight against tax abuse. As yet, it would seem that regulators have not learned how to deliver it. The result is that although some [*e.g.* 20] suggest that CRD IV reporting has been of benefit in the fight against tax avoid-

ance, this survey shows it could achieve much more. A similar conclusion has, at least as far as data issues are concerned, been reached by Cobham *et al.* [13] with regards to initial reporting of OECD-based CBCR data. What appears clear is that tax avoidance by profit-shifting will not be beaten until reliable accounting underpins the effort.

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Appendix 1: Nordic and UK Banks: case study comparing accounting and CRD IV data

Banks	Year	Source	Turnover €m	Profit before tax €m	Tax paid per profit and loss account €m	Tax paid per cash flow €m	Full-time employees
Nordic Banks							
Danske Bank A/S	2013	CRD IV	-	-	-	-	-
Danske Bank A/S	2014	CRD IV	11,548	1,068	537	537	18,603
Danske Bank A/S	2015	CRD IV	10,794	2,381	620	620	19,049
Danske Bank A/S	2016	CRD IV	10,665	3,405	738	738	19,303
Danske Bank A/S	2017	CRD IV	10,244	3,533	725	725	19,769
Danske Bank A/S	Aggregate	CRD IV	43,251	10,387	2,620	2,620	76,724
Danske Bank A/S	2013	Accounts					
Danske Bank A/S	2014	Accounts	6,081	1,069	539	549	18,603
Danske Bank A/S	2015	Accounts	6,115	2,381	622	633	19,049
Danske Bank A/S	2016	Accounts	6,442	3,406	739	666	19,303
Danske Bank A/S	2017	Accounts	6,473	3,534	724	737	19,768
Danske Bank A/S	Aggregate	Accounts	25,110	10,390	2,624	2,585	76,723
Danske Bank A/S	2013	Difference	-	-	-	-	-
Danske Bank A/S	2014	Difference	5,467	−1	−2	−12	-
Danske Bank A/S	2015	Difference	4,679	-0	−2	−13	-
Danske Bank A/S	2016	Difference	4,223	−1	−1	72	-
Danske Bank A/S	2017	Difference	3,771	−1	1	−12	1
Danske Bank A/S	Aggregate	Difference	18,141	−3	−4	35	1
DNB ASA	2013	CRD IV	-	-	-	-	-
DNB ASA	2014	CRD IV	-	-	776	776	-
DNB ASA	2015	CRD IV	-	-	802	802	12,443
DNB ASA	2016	CRD IV	-	-	458	458	11,992
DNB ASA	2017	CRD IV	5,535	2,877	542	542	9,561
DNB ASA	Aggregate	CRD IV	5,535	2,877	2,578	2,578	33,996
DNB ASA	2013	Accounts					
DNB ASA	2014	Accounts			774	359	
DNB ASA	2015	Accounts			789	288	11,840
DNB ASA	2016	Accounts			446	314	11,459
DNB ASA	2017	Accounts	5,487	2,882	542	1,156	9,561
DNB ASA	Aggregate	Accounts	5,487	2,882	2,551	2,117	32,860
DNB ASA	2013	Difference	-	-	-	-	-
DNB ASA	2014	Difference	-	-	2	417	-
DNB ASA	2015	Difference	-	-	13	514	603
DNB ASA	2016	Difference	-	-	12	144	533
DNB ASA	2017	Difference	48	−5	−0	−614	-
DNB ASA	Aggregate	Difference	48	−5	27	461	1,136
Nordea Bank AB	2013	CRD IV	10,217	3,994	976	976	29,107
Nordea Bank AB	2014	CRD IV	10,241	4,307	950	950	29,814
Nordea Bank AB	2015	CRD IV	10,141	4,704	1,042	1,042	29,681
Nordea Bank AB	2016	CRD IV	9,927	4,625	859	859	30,873
Nordea Bank AB	2017	CRD IV	9,469	3,998	950	950	31,437
Nordea Bank AB	Aggregate	CRD IV	49,995	21,628	4,777	4,777	150,912
Nordea Bank AB	2013	Accounts	9,891	4,116	1,009	1,010	29,429
Nordea Bank AB	2014	Accounts	10,241	4,307	950	966	29,643

Nordea Bank AB	2015	Accounts	10,140	4,704	1,042	1,056	29,815
Nordea Bank AB	2016	Accounts	9,927	4,625	859	952	31,596
Nordea Bank AB	2017	Accounts	9,469	3,998	950	950	30,399
Nordea Bank AB	Aggregate	Accounts	49,668	21,750	4,810	4,934	150,882
Nordea Bank AB	2013	Difference	326	−122	−33	−34	−322
Nordea Bank AB	2014	Difference	-	-	-	−16	171
Nordea Bank AB	2015	Difference	1	-	-	−14	−134
Nordea Bank AB	2016	Difference	-	-	-	−93	−723
Nordea Bank AB	2017	Difference	-	-	-	-	1,038
Nordea Bank AB	Aggregate	Difference	327	−122	−33	−157	30
Skandinaviska Enskilda Banken AB	2013	CRD IV	9,720	2,094	385	385	17,096
Skandinaviska Enskilda Banken AB	2014	CRD IV	9,123	2,557	457	457	16,702
Skandinaviska Enskilda Banken AB	2015	CRD IV	8,117	2,230	460	460	16,599
Skandinaviska Enskilda Banken AB	2016	CRD IV	7,630	1,572	448	448	16,260
Skandinaviska Enskilda Banken AB	2017	CRD IV	7,662	2,161	473	473	15,949
Skandinaviska Enskilda Banken AB	Aggregate	CRD IV	42,252	10,614	2,223	2,223	82,606
Skandinaviska Enskilda Banken AB	2013	Accounts	4,749	2,095	386	150	17,096
Skandinaviska Enskilda Banken AB	2014	Accounts	4,786	2,568	454	318	16,742
Skandinaviska Enskilda Banken AB	2015	Accounts	4,775	2,230	458	180	16,599
Skandinaviska Enskilda Banken AB	2016	Accounts	4,572	1,571	449	373	16,260
Skandinaviska Enskilda Banken AB	2017	Accounts	4,679	2,160	474	244	15,946
Skandinaviska Enskilda Banken AB	Aggregate	Accounts	23,560	10,626	2,221	1,266	82,643
Skandinaviska Enskilda Banken AB	2013	Difference	4,971	−1	−1	235	-
Skandinaviska Enskilda Banken AB	2014	Difference	4,337	−11	3	139	−40
Skandinaviska Enskilda Banken AB	2015	Difference	3,342	-0	2	280	-
Skandinaviska Enskilda Banken AB	2016	Difference	3,058	1	−1	75	-
Skandinaviska Enskilda Banken AB	2017	Difference	2,983	1	−1	229	3
Skandinaviska Enskilda Banken AB	Aggregate	Difference	18,692	−12	2	957	−37
Svenska Handelsbanken AB	2013	CRD IV	4,200	2,092	453	453	-
Svenska Handelsbanken AB	2014	CRD IV	4,215	2,113	447	447	11,585
Svenska Handelsbanken AB	2015	CRD IV	4,312	2,187	457	457	11,821
Svenska Handelsbanken AB	2016	CRD IV	4,309	2,184	402	402	11,759
Svenska Handelsbanken AB	2017	CRD IV	4,325	2,182	547	547	11,832
Svenska Handelsbanken AB	Aggregate	CRD IV	21,361	10,758	2,306	2,306	46,997
Svenska Handelsbanken AB	2013	Accounts	4,199	2,091	453	575	-
Svenska Handelsbanken AB	2014	Accounts	3,868	1,928	421	430	11,692
Svenska Handelsbanken AB	2015	Accounts	4,062	2,140	446	451	11,819
Svenska Handelsbanken AB	2016	Accounts	4,309	2,181	465	586	11,759
Svenska Handelsbanken AB	2017	Accounts	4,326	2,183	511	594	11,832
Svenska Handelsbanken AB	Aggregate	Accounts	20,764	10,522	2,296	2,636	47,102
Svenska Handelsbanken AB	2013	Difference	1	1	0	−122	-
Svenska Handelsbanken AB	2014	Difference	347	185	26	17	−107
Svenska Handelsbanken AB	2015	Difference	250	47	11	6	2
Svenska Handelsbanken AB	2016	Difference	0	3	−63	−184	-
Svenska Handelsbanken AB	2017	Difference	−1	−1	36	−47	-
Svenska Handelsbanken AB	Aggregate	Difference	597	236	10	−330	−105
Swedbank AB	2013	CRD IV	4,317	2,238	474	474	14,265
Swedbank AB	2014	CRD IV	4,376	2,484	474	474	14,583

Swedbank AB	2015	CRD IV	4,053	2,174	495	495	13,893
Swedbank AB	2016	CRD IV	4,469	2,510	446	446	14,009
Swedbank AB	2017	CRD IV	4,496	2,548	537	537	14,588
Swedbank AB	Aggregate	CRD IV	21,711	11,954	2,426	2,426	71,338
Swedbank AB	2013	Accounts	4,223	2,237	474	342	14,265
Swedbank AB	2014	Accounts	4,270	2,313	473	604	14,583
Swedbank AB	2015	Accounts	3,967	2,178	494	498	13,893
Swedbank AB	2016	Accounts	4,315	2,512	445	379	14,061
Swedbank AB	2017	Accounts	4,405	2,548	538	386	14,588
Swedbank AB	Aggregate	Accounts	21,181	11,787	2,424	2,209	71,390
Swedbank AB	2013	Difference	94	1	0	132	0
Swedbank AB	2014	Difference	106	171	1	(130)	0
Swedbank AB	2015	Difference	86	(4)	1	(3)	0
Swedbank AB	2016	Difference	154	(2)	1	67	(52)
Swedbank AB	2017	Difference	91	0	(1)	151	0
Swedbank AB	Aggregate	Difference	530	167	2	217	(52)
UK Banks							
Barclays plc	2013	CRD IV	42,929	10,718	8,888	8,888	140,282
Barclays plc	2014	CRD IV	38,429	6,873	1,272	1,272	135,336
Barclays plc	2015	CRD IV	40,505	4,992	1,615	1,615	130,900
Barclays plc	2016	CRD IV	37,076	8,809	859	859	122,947
Barclays plc	2017	CRD IV	29,599	6,306	487	487	97,418
Barclays plc	Aggregate	CRD IV	188,538	37,698	13,121	13,121	626,883
Barclays plc	2013	Accounts	29,282	3,378	2,536	1,835	139,600
Barclays plc	2014	Accounts	28,694	2,800	1,740	1,926	132,300
Barclays plc	2015	Accounts	32,167	2,857	2,368	2,302	129,400
Barclays plc	2016	Accounts	26,254	3,953	655	955	119,300
Barclays plc	2017	Accounts	24,054	4,041	939	808	79,900
Barclays plc	Aggregate	Accounts	140,452	17,029	8,237	7,825	600,500
Barclays plc	2013	Difference	13,647	7,340	6,352	7,053	682
Barclays plc	2014	Difference	9,735	4,073	−468	−654	3,036
Barclays plc	2015	Difference	8,338	2,135	−753	−687	1,500
Barclays plc	2016	Difference	10,822	4,856	204	−96	3,647
Barclays plc	2017	Difference	5,545	2,265	−452	−321	17,518
Barclays plc	Aggregate	Difference	48,086	20,669	4,884	5,296	26,383
Lloyds Banking Group	2013	CRD IV	-	-	-	-	-
Lloyds Banking Group	2014	CRD IV	20,352	2,187	40	40	89,074
Lloyds Banking Group	2015	CRD IV	24,009	2,266	247	247	82,200
Lloyds Banking Group	2016	CRD IV	21,134	5,187	1,007	1,007	72,870
Lloyds Banking Group	2017	CRD IV	21,295	6,021	1,172	1,172	69,556
Lloyds Banking Group	Aggregate	CRD IV	86,790	15,661	2,466	2,466	313,700
Lloyds Banking Group	2013	Accounts	-	-	-	-	-
Lloyds Banking Group	2014	Accounts	20,353	2,187	−19	41	90,844
Lloyds Banking Group	2015	Accounts	24,010	2,266	788	247	89,300
Lloyds Banking Group	2016	Accounts	21,133	5,187	1,067	1,006	71,888
Lloyds Banking Group	2017	Accounts	21,296	6,020	1,427	1,173	69,726
Lloyds Banking Group	Aggregate	Accounts	86,791	15,660	3,264	2,467	321,758

Lloyds Banking Group	2013	Difference	-	-	-	-	-
Lloyds Banking Group	2014	Difference	−1	0	59	−1	−1,770
Lloyds Banking Group	2015	Difference	−1	0	−541	0	−7,100
Lloyds Banking Group	2016	Difference	1	0	−60	1	982
Lloyds Banking Group	2017	Difference	−1	1	−255	−1	−170
Lloyds Banking Group	Aggregate	Difference	−1	1	−798	−1	−8,058
Royal Bank of Scotland	2013	CRD IV	-	-	-	-	-
Royal Bank of Scotland	2014	CRD IV	18,804	3,281	220	220	94,640
Royal Bank of Scotland	2015	CRD IV	17,810	−3,725	73	73	91,839
Royal Bank of Scotland	2016	CRD IV	15,409	−4,996	167	167	85,533
Royal Bank of Scotland	2017	CRD IV	14,999	2,567	606	606	73,980
Royal Bank of Scotland	Aggregate	CRD IV	67,022	−2,873	1,066	1,066	345,992
Royal Bank of Scotland	2013	Accounts	-	-	-	-	-
Royal Bank of Scotland	2014	Accounts	18,803	3,280	514	218	95,600
Royal Bank of Scotland	2015	Accounts	17,810	−3,725	40	101	93,659
Royal Bank of Scotland	2016	Accounts	15,409	−4,996	1,150	209	77,900
Royal Bank of Scotland	2017	Accounts	14,989	2,555	903	593	71,200
Royal Bank of Scotland	Aggregate	Accounts	67,011	−2,886	2,607	1,122	338,359
Royal Bank of Scotland	2013	Difference	-	-	-	-	-
Royal Bank of Scotland	2014	Difference	1	1	−294	2	−960
Royal Bank of Scotland	2015	Difference	-0	0	33	−28	−1,820
Royal Bank of Scotland	2016	Difference	0	-0	−983	−42	7,633
Royal Bank of Scotland	2017	Difference	10	12	−297	13	2,780
Royal Bank of Scotla	Aggregate	Difference	11	13	−1,541	−56	7,633
HSBC Holdings plc	2013	CRD IV	51,691	-	-	-	258,692
HSBC Holdings plc	2014	CRD IV	46,179	14,086	2,699	2,699	256,286
HSBC Holdings plc	2015	CRD IV	53,917	17,008	3,034	3,034	258,954
HSBC Holdings plc	2016	CRD IV	56,932	13,843	2,934	2,934	245,526
HSBC Holdings plc	2017	CRD IV	60,285	14,680	2,371	2,371	233,126
HSBC Holdings plc	Aggregate	CRD IV	269,004	59,617	11,038	11,038	1,252,584
HSBC Holdings plc	2013	Accounts	44,285	-	-	-	268,795
HSBC Holdings plc	2014	Accounts	43,272	14,083	2,978	2,694	264,767
HSBC Holdings plc	2015	Accounts	50,561	17,010	3,423	3,473	268,433
HSBC Holdings plc	2016	Accounts	40,283	6,429	3,316	2,950	246,933
HSBC Holdings plc	2017	Accounts	44,063	15,227	3,782	2,816	244,788
HSBC Holdings plc	Aggregate	Accounts	222,463	52,749	13,500	11,933	1,293,716
HSBC Holdings plc	2013	Difference	7,406	-	-	-	−10,103
HSBC Holdings plc	2014	Difference	2,907	3	−279	5	−8,481
HSBC Holdings plc	2015	Difference	3,356	−2	−389	−439	−9,479
HSBC Holdings plc	2016	Difference	16,649	7,414	−382	−16	−1,407
HSBC Holdings plc	2017	Difference	16,222	−547	−1,411	−445	−11,662
HSBC Holdings plc	Aggregate	Difference	46,541	6,868	−2,462	−895	−41,132
Standard Chartered	2013	CRD IV	13,836	5,785	1,181	1,181	88,257
Standard Chartered	2014	CRD IV	6,128	2,175	-	-	-
Standard Chartered	2015	CRD IV	15,750	−902	1,014	1,014	87,318
Standard Chartered	2016	CRD IV	13,782	1,216	1,032	1,032	84,916
Standard Chartered	2017	CRD IV	13,681	3,063	726	726	86,794

Standard Chartered	Aggregate	CRD IV	63,177	11,337	3,953	3,953	347,285
Standard Chartered	2013	Accounts	14,143	4,567	1,268	1,292	86,640
Standard Chartered	2014	Accounts	13,809	3,190	-	-	-
Standard Chartered	2015	Accounts	11,516	−1,147	882	968	84,076
Standard Chartered	2016	Accounts	10,590	308	607	969	86,693
Standard Chartered	2017	Accounts	10,865	1,819	727	689	86,794
Standard Chartered	Aggregate	Accounts	60,923	8,737	3,484	3,919	344,203
Standard Chartered	2013	Difference	−307	1,218	−87	−111	1,617
Standard Chartered	2014	Difference	−7,681	−1,015	-	-	-
Standard Chartered	2015	Difference	4,234	245	132	46	3,242
Standard Chartered	2016	Difference	3,192	908	425	63	−1,777
Standard Chartered	2017	Difference	2,816	1,244	−1	37	-
Standard Chartered	Aggregate	Difference	2,254	2,600	469	34	3,082
Nationwide	2013	CRD IV	0	0	0	0	0
Nationwide	2014	CRD IV	3,766	0	0	0	15,732
Nationwide	2015	CRD IV	4,331	1,439	227	227	16,200
Nationwide	2016	CRD IV	4,178	1,617	310	310	16,625
Nationwide	2017	CRD IV	3,855	1,234	339	339	17,295
Nationwide	Aggregate	CRD IV	16,130	4,290	876	876	65,852
Nationwide	2013	Accounts	0	0	0	0	0
Nationwide	2014	Accounts	3,530	0	0	0	17,268
Nationwide	2015	Accounts	4,332	1,439	266	227	17,622
Nationwide	2016	Accounts	4,127	1,565	394	311	18,109
Nationwide	2017	Accounts	3,824	1,203	339	339	18,761
Nationwide	Aggregate	Accounts	15,813	4,207	999	877	71,760
Nationwide	2013	Difference	0	0	0	0	0
Nationwide	2014	Difference	236	0	0	0	(1,536)
Nationwide	2015	Difference	(1)	0	(39)	(0)	(1,422)
Nationwide	2016	Difference	51	52	(84)	(1)	(1,484)
Nationwide	2017	Difference	31	31	0	0	(1,466)
Nationwide	Aggregate	Difference	317	83	(123)	(1)	(5,908)

Sources: CRD IV data and annual reports, all values are translated to euros at annual average rates wherever required to do so.

Appendix 2: Averaged bank data for a -year period for all countries referred to in CRD IV reporting by the banks surveyed for the -year period, 2013–2017, with supporting calculations on the average effective tax rates, average turnover per employee, and average profit per employee by jurisdiction for this period

Countries	Average turnover €'m	Average profit before tax €'m	Average reported tax €'m	Average full time employees	Average effective tax rate %	Average turnover per employee €'000	Average profit per employee %
Others	(2,430)	(1,456)	83	12,686	(5.7%)	(192)	(115)
Albania	131	27	4	1,998	16.4%	66	13
Algeria	318	139	39	3,230	28.0%	99	43
Angola	6	1	0	21	14.3%	299	65
Argentina	3,083	1,127	390	15,493	34.7%	199	73
Armenia	25	(1)	2	275	(333.3%)	92	(2)
Australia	2,555	843	295	4,743	35.0%	539	178
Austria	6,143	935	278	26,852	29.7%	229	35
Bahamas	55	27	0	57	0.0%	958	474
Bahrain	205	37	0	886	0.0%	231	42

Bangladesh	317	198	89	2,257	44.7%	140	88
Belarus	157	86	23	1,636	26.2%	96	53
Belgium	13,367	4,029	1,092	43,455	27.1%	308	93
Benin	16	(5)	(2)	190	37.0%	83	(28)
Bermuda	247	117	0	466	0.0%	529	250
Bolivia	18	4	1	273	25.0%	65	15
Bosnia and Herzegovina	273	82	10	3,316	12.7%	82	25
Botswana	166	37	9	1,753	25.5%	95	21
Brazil	13,788	2,750	1,003	52,995	36.5%	260	52
Brunei	54	7	5	578	77.1%	94	12
Bulgaria	803	278	26	10,765	9.4%	75	26
Burkina Faso	49	14	2	507	15.9%	97	27
Cambodia	0	0	(0)	30	(50.0%)	7	13
Cameroon	151	45	17	1,159	37.8%	130	39
Canada	1,856	563	132	6,488	23.5%	286	87
Cayman Islands	(46)	53	(0)	30	(0.4%)	(1,547)	1,780
Chad	18	0	1	169	200.0%	108	2
Channel Islands	415	236	16	1,000	6.8%	415	236
Chile	2,882	1,466	286	13,977	19.5%	206	105
China, P.R.: Mainland	3,935	2,407	165	29,310	6.9%	134	82
China with HK	163	53	10	400	19.6%	407	133
Colombia	794	296	120	5,808	40.6%	137	51
Congo, Republic of	17	5	2	171	43.5%	102	27
Croatia	1,773	336	71	13,917	21.2%	127	24
Curacao	115	(24)	1	44	(4.2%)	2,621	(543)
Cyprus	7	6	1	36	21.4%	208	157
Czech Republic	4,621	2,226	482	32,456	21.7%	142	69
Denmark	9,590	2,723	571	18,347	21.0%	523	148
Djibouti	19	(1)	(0)	208	25.0%	89	(4)
Ecuador	2	0	0	18	100.0%	87	11
Egypt	1,097	560	135	11,019	24.1%	100	51
Estonia	629	286	67	3,710	23.4%	170	77
Equatorial Guinea	26	10	4	234	43.8%	111	41
Falkland Islands	2	1	0	17	0.0%	116	58
Fiji	4	(1)	0	80	0.0%	45	(13)
Finland	3,423	1,396	340	9,635	24.3%	355	145
France	65,307	12,799	4,604	293,347	36.0%	223	44
French Polynesia	86	22	13	459	57.1%	187	49
Gambia	6	1	0	124	50.0%	47	6
Georgia	484	(456)	5	1,516	(1.2%)	319	(301)
Germany	48,907	8,137	1,960	165,732	24.1%	295	49
Ghana	300	143	41	2,341	28.8%	128	61
Gibraltar	880	337	66	3,447	19.7%	255	98
United Kingdom	86,649	10,139	3,830	266,560	37.8%	325	38
Greece	90	(43)	9	453	(21.9%)	199	(95)
Guernsey	212	111	9	430	8.3%	494	258
Guinea	43	16	6	368	36.3%	116	44
Hong Kong, China	18,252	8,038	960	40,796	11.9%	447	197
Hungary	1,855	70	106	14,484	150.6%	128	5
India	4,011	1,653	728	96,003	44.0%	42	17
Indonesia	904	190	86	9,031	45.2%	100	21
Iraq	20	16	0	15	2.6%	1,342	1,068
Ireland	5,466	2,742	126	15,653	4.6%	349	175
Isle of Man	376	198	14	1,113	7.1%	338	178
Israel	76	33	10	192	31.3%	394	170
Italy	40,602	117	1,057	166,016	902.0%	245	1
Ivory Coast	181	60	12	1,586	20.7%	114	38
Japan	2,179	740	237	3,354	32.0%	650	221
Jersey	901	504	25	1,885	4.9%	478	267
Jordan	29	8	5	183	58.5%	160	45

Kazakhstan	18	6	1	153	20.7%	118	38
Kenya	415	171	58	3,986	34.0%	104	43
Kosovo	42	16	2	686	10.0%	61	23
Kuwait	37	16	0	84	1.3%	444	188
Laos	6	1	0	134	0.0%	43	7
Latvia	467	185	31	3,587	16.8%	130	52
Lebanon	32	27	3	172	10.9%	189	159
Liechtenstein	1	0	0	3	N/A	333	0
Lithuania	539	228	38	5,865	16.7%	92	39
Luxembourg	8,823	4,571	691	12,354	15.1%	714	370
Macao, China	75	49	5	191	10.7%	392	256
Macedonia, F.Y.R.	19	5	0	308	8.3%	61	16
Madagascar	66	35	7	980	20.3%	68	36
Malaysia	1,500	438	99	14,934	22.6%	100	29
Maldives	14	12	4	20	32.2%	707	596
Mali	14	2	1	96	33.3%	146	19
Malta	268	170	23	1,111	13.7%	241	153
Marshall Islands	(18)	(24)	0	0	0.0%	N/A	N/A
Mauritius	407	297	13	1,562	4.2%	260	190
Mexico	10,376	3,955	1,068	60,885	27.0%	170	65
Moldova	22	9	1	579	13.3%	38	16
Monaco	543	170	33	1,369	19.7%	397	124
Montenegro	19	6	1	224	13.3%	86	27
Morocco	784	218	81	8,355	36.9%	94	26
Mozambique	31	6	0	457	0.0%	68	13
Namibia	0	0	0	2	N/A	0	0
Nepal	81	30	5	480	17.4%	168	62
Netherlands	27,745	4,354	1,044	67,312	24.0%	412	65
New Caledonia	119	54	22	602	41.2%	197	90
New Zealand	409	147	38	504	25.9%	811	292
Nigeria	144	74	4	734	4.9%	196	101
Norway	5,208	2,592	860	11,495	33.2%	453	225
Oman	148	33	4	884	12.7%	168	37
Pakistan	196	104	41	3,216	39.8%	61	32
Panama	3	2	4	4	237.5%	800	400
Paraguay	63	20	4	374	17.6%	167	54
Peru	924	438	155	4,879	35.4%	189	90
Philippines	306	63	16	6,567	25.4%	47	10
Poland	6,028	2,080	516	65,420	24.8%	92	32
Portugal	1,903	599	130	10,997	21.7%	173	54
Puerto Rico	292	30	21	1,145	68.7%	255	26
Qatar	175	79	7	382	9.1%	458	208
Romania	2,331	325	40	26,050	12.3%	89	12
Russia	3,080	1,011	234	30,263	23.2%	102	33
Saint-Martin, France	2	0	0	6	0.0%	313	31
Saudi Arabia	126	414	6	96	1.4%	1,315	4,315
Senegal	106	15	6	1,063	39.7%	100	14
Serbia	693	214	17	8,827	7.9%	79	24
Seychelles	13	6	2	96	31.3%	139	66
Sierra Leone	20	9	2	106	17.8%	189	85
Singapore	6,343	1,279	177	20,005	13.8%	317	64
Slovakia	1,899	701	158	14,909	22.6%	127	47
Slovenia	269	65	11	2,127	17.5%	127	31
South Africa	3,570	1,056	267	29,333	25.3%	122	36
Korea, Rep.	1,608	(102)	67	5,619	(65.5%)	286	(18)
Spain	22,194	411	963	92,470	234.0%	240	4
Sri Lanka	205	109	50	3,829	46.4%	54	28
Sweden	15,094	5,846	1,244	29,909	21.3%	505	195
Switzerland	2,633	(550)	78	6,888	(14.2%)	382	(80)

Taiwan Province of China	911	211	31	5,809	14.8%	157	36
Tanzania	134	22	6	1,864	28.7%	72	12
Thailand	265	26	17	2,182	66.2%	121	12
Togo	2	0	0	17	100.0%	133	12
Tunisia	176	51	19	2,621	37.1%	67	20
Turkey	4,490	1,558	305	34,787	19.6%	129	45
United Arab Emirates	2,211	515	106	6,023	20.7%	367	85
Uganda	98	30	3	883	10.6%	111	34
Ukraine	472	(294)	14	21,468	(4.6%)	22	(14)
Uruguay	443	137	39	1,931	28.7%	229	71
United States	41,817	5,093	1,637	84,586	32.1%	494	60
Vanuatu	9	3	0	97	6.7%	93	31
Venezuela	333	100	72	3,945	72.1%	84	25
Vietnam	242	69	15	2,198	21.2%	110	31
British Virgin Islands	4	4	0	0	0.0%	N/A	N/A
Zambia	148	58	18	1,472	31.2%	101	40
Zimbabwe	75	16	6	888	37.8%	84	18
Total above	528,909	107,168	30,327	2,153,242	28.3%	246	50

Appendix 3: Comparisons of headline and effective tax rates

	Headline tax rates				Effective tax rates			Differences	
Country	CT rate per OECD %	CT rate per KPMG etc. %	CT rate per P -ky %	CT rate used %	ETR per OECD %	ETR per CRD IV Data %	ETR per P Janský %	Headline TR used and ETR per OECD %	ETR per OECD and CRD IV %
Albania		15.00		15.0	14.5	16.4		0.5	(1.9)
Andorra	10.0	10.00		10.0	8.8			1.2	
Argentina	30.0	30.00		30.0	35.7	34.7		(5.7)	1.0
Botswana	22.0	22.00		22.0	27.3	25.5		(5.3)	1.8
Brazil	34.0	34.00		34.0	29.9	36.5		4.1	(6.6)
British Virgin Islands	0.0	0.00		0.0	0.0	0.0		0.0	0.0
Bulgaria	10.0	10.00	10.0	10.0	9.1	9.4	10.0	0.9	(0.3)
Cayman Islands	0.0	0.00		0.0	0.0	−0.4		0.0	0.4
China (People's Republic of)	25.0	25.00		25.0	23.6	6.9		1.4	16.7
Croatia	18.0	20.00	20.0	20.0	15.6	21.2	15.0	4.4	(5.6)
Curacao	22.0	22.00		22.0	20.5	−4.2		1.5	24.7
Cyprus		12.50	12.0	12.5	11.9	21.4	10.0	0.6	(9.5)
Democratic Republic of the Congo	35.0	35.00		35.0	31.6	43.5		3.4	(11.9)
Guernsey	0.0	0.00		0.0	0.0	8.3		0.0	(8.3)
Hong Kong, China	16.5	16.50		16.5	15.2	11.9		1.3	3.3
India	48.3	34.61		34.6	44.1	44.0		(9.5)	0.1
Indonesia	25.0	25.00		25.0	22.4	45.2		2.6	(22.8)
Isle of Man	0.0	0.00		0.0	0.0	7.1		0.0	(7.1)
Jamaica	25.0			25.0	23.3			1.7	
Jersey	0.0	20.00		0.0	0.0	4.9		0.0	(4.9)
Kenya	30.0	30.00		30.0	26.8	34.0		3.2	(7.2)
Liechtenstein	12.5	12.50		12.5	10.1	0.0		2.4	10.1
Macau, China	12.0	12.00		12.0	11.5	10.7		0.5	0.8
Malta	35.0	35.00	35.0	35.0	33.3	13.7	16.0	1.7	19.6
Mauritius	15.0	15.00		15.0	14.0	4.2		1.0	9.8
Montserrat	30.0			30.0	30.4			(0.4)	
Peru	29.5	29.50		29.5	28.1	35.4		1.4	(7.3)
Romania	16.0	16.00	16.0	16.0	14.5	12.3	17.0	1.5	2.2
Russia	20.0	20.00		20.0	18.8	23.2		1.2	(4.4)
Saudi Arabia	0.0	20.00		0.0	0.0	1.4		0.0	(1.4)

Senegal	30.0	30.00		30.0	27.6	39.7		2.4	(12.1)
Seychelles	30.0			30.0	28.3	31.3		1.7	(3.0)
Singapore	17.0	17.00		17.0	16.2	13.8		0.8	2.4
South Africa	28.0	28.00		28.0	27.1	25.3		0.9	1.8
Thailand	20.0	20.00		20.0	21.6	66.2		(1.6)	(44.6)
Turks and Caicos Islands	0.0	0.00		0.0	0.0			0.0	
Australia	30.0	30.00		30.0	31.4	35.0		(1.4)	(3.6)
Austria	25.0	25.00	25.0	25.0	23.7	9.5	13.0	1.3	14.2
Belgium	29.6	29.00	34.0	29.6	26.0	27.1	14.0	3.6	(1.1)
Canada	26.8	26.50		26.8	24.7	23.5		2.1	1.2
Chile	25.0	26.00		25.0	31.8	19.5		(6.8)	12.3
Czech Republic	19.0	19.00	19.0	19.0	20.6	21.7	15.0	(1.6)	(1.1)
Denmark	22.0	22.00	24.0	22.0	19.5	21.0	19.0	2.5	(1.5)
Estonia	20.0	20.00	21.0	20.0	17.0	23.4	14.0	3.0	(6.4)
Finland	20.0	20.00	23.0	20.0	19.0	24.3	12.0	1.0	(5.3)
France	34.4	33.00	33.0	33.0	33.0	36.0	17.0	0.0	(3.0)
Germany	29.8	30.00	30.0	29.8	27.3	24.1	20.0	2.5	3.2
Greece	29.0	29.00	24.0	29.0	27.6	−21.9	28.0	1.4	49.5
Hungary	9.0	9.00	19.0	9.0	9.9	150.6	8.0	(0.9)	(140.7)
Iceland	20.0	20.00		20.0	18.8			1.2	
Ireland	12.5	12.50	13.0	12.5	11.8	4.6	16.0	0.7	7.2
Israel	23.0	23.00		23.0	22.9	31.3		0.1	(8.4)
Italy	27.8	24.00	31.0	24.0	22.1	902.0	30.0	1.9	(879.9)
Japan	29.7	30.86		29.7	27.5	32.0		2.2	(4.5)
Korea	27.5	25.00		25.0	23.2	−65.5		1.8	88.7
Latvia	20.0	20.00	15.0	20.0	13.5	16.8	11.0	6.5	(3.3)
Lithuania	15.0	15.00	15.0	15.0	13.3	16.7	12.0	1.7	(3.4)
Luxembourg	26.0	26.01	29.0	26.0	24.5	15.1	2.0	1.5	9.4
Mexico	30.0	30.00		30.0	27.4	27.0		2.6	0.4
Netherlands	25.0	25.00	25.0	25.0	23.0	24.0	10.0	2.0	(1.0)
New Zealand	28.0	28.00		28.0	26.8	25.9		1.2	0.9
Norway	23.0	23.00		23.0	23.1	33.2		(0.1)	(10.1)
Poland	19.0	19.00	19.0	19.0	17.6	24.8	17.0	1.4	(7.2)
Portugal	31.5	21.00	24.0	31.5	27.5	21.7	18.0	4.0	5.8
Slovak Republic	21.0	21.00	21.0	21.0	21.8	22.6	20.0	(0.8)	(0.8)
Slovenia	19.0	19.00	18.0	19.0	17.9	17.5	14.0	1.1	0.4
Spain	25.0	25.00	30.0	25.0	24.8	234.0	22.0	0.2	(209.2)
Sweden	22.0	22.00	24.0	22.0	19.8	21.3	13.0	2.2	(1.5)
Switzerland	21.1	18.00		21.1	19.5	−14.2		1.6	33.7
Turkey	22.0	22.00		22.0	20.2	19.6		1.8	0.6
United Kingdom	19.0	19.00	23.0	19.0	19.0	37.8	15.0	0.0	(18.8)
United States	25.8	27.00		25.8	34.2	32.1		(8.4)	2.1

Sources as noted in text: CRD IV data, authors' calculations

Appendix 4: Tax gaps by countries for all jurisdictions and the EU member states
Authors' calculations as noted in text

Names	Countries	Average profit misallocation €'m	Tax rate used for main estimate %	Average total tax cost €'m	Average total tax gain €'m	Average EU tax cost €'m	Average EU tax gain €'m
All banks	Italy	(8,127.6)	27.8	(2,259.5)	0.0	(2,438.3)	0.0
All banks	Spain	(4,138.2)	25.0	(1,034.5)	0.0	(910.4)	0.0
All banks	United Kingdom	(5,273.0)	19.0	(1,001.9)	0.0	(790.9)	0.0
All banks	India	(1,142.4)	48.3	(551.8)	0.0	0.0	0.0
All banks	France	(1,117.1)	34.4	(384.3)	0.0	(189.9)	0.0
All banks	Other	(1,525.1)	24.0	(366.6)	0.0	0.0	0.0
All banks	United States	(1,248.8)	25.8	(322.2)	0.0	0.0	0.0
All banks	Germany	(941.8)	29.8	(280.7)	0.0	(188.4)	0.0

All banks	Switzerland	(988.4)	21.1	(208.5)	0.0	0.0	0.0
All banks	Ukraine	(876.3)	18.0	(157.7)	0.0	0.0	0.0
All banks	Korea, Rep.	(404.7)	27.5	(111.3)	0.0	0.0	0.0
All banks	Romania	(559.6)	16.0	(89.5)	0.0	(95.1)	0.0
All banks	Austria	(355.1)	25.0	(88.8)	0.0	(46.2)	0.0
All banks	Georgia	(542.8)	15.0	(81.4)	0.0	0.0	0.0
All banks	Hungary	(478.0)	9.0	(43.0)	0.0	(38.2)	0.0
All banks	Philippines	(131.4)	30.0	(39.4)	0.0	0.0	0.0
All banks	Croatia	(190.3)	18.0	(34.3)	0.0	(28.5)	0.0
All banks	Netherlands	(132.3)	25.0	(33.1)	0.0	(13.2)	0.0
All banks	Indonesia	(126.1)	25.0	(31.5)	0.0	0.0	0.0
All banks	Poland	(158.9)	19.0	(30.2)	0.0	(27.0)	0.0
All banks	Morocco	(69.2)	31.0	(21.4)	0.0	0.0	0.0
All banks	Malaysia	(85.6)	24.0	(20.5)	0.0	0.0	0.0
All banks	Greece	(63.4)	29.0	(18.4)	0.0	(17.8)	0.0
All banks	Tanzania	(38.4)	30.0	(11.5)	0.0	0.0	0.0
All banks	Serbia	(76.3)	15.0	(11.4)	0.0	0.0	0.0
All banks	Thailand	(55.1)	20.0	(11.0)	0.0	0.0	0.0
All banks	Venezuela	(31.7)	34.0	(10.8)	0.0	0.0	0.0
All banks	Russia	(53.7)	20.0	(10.7)	0.0	0.0	0.0
All banks	South Africa	(36.0)	28.0	(10.1)	0.0	0.0	0.0
All banks	Curacao	(36.5)	22.0	(8.0)	0.0	0.0	0.0
All banks	Tunisia	(31.8)	25.0	(8.0)	0.0	0.0	0.0
All banks	Bulgaria	(71.2)	10.0	(7.1)	0.0	(7.1)	0.0
All banks	Senegal	(22.6)	30.0	(6.8)	0.0	0.0	0.0
All banks	Puerto Rico	(28.1)	24.0	(6.7)	0.0	0.0	0.0
All banks	Albania	(36.2)	15.0	(5.4)	0.0	0.0	0.0
All banks	Marshall Islands	(22.4)	24.0	(5.4)	0.0	0.0	0.0
All banks	Botswana	(23.6)	22.0	(5.2)	0.0	0.0	0.0
All banks	Taiwan Province of China	(25.6)	17.0	(4.4)	0.0	0.0	0.0
All banks	Benin	(11.7)	30.0	(3.5)	0.0	0.0	0.0
All banks	Zimbabwe	(13.3)	25.0	(3.3)	0.0	0.0	0.0
All banks	Slovenia	(15.0)	19.0	(2.8)	0.0	(2.1)	0.0
All banks	Bosnia and Herzegovina	(28.2)	10.0	(2.8)	0.0	0.0	0.0
All banks	Mozambique	(8.7)	32.0	(2.8)	0.0	0.0	0.0
All banks	Brunei	(12.9)	18.5	(2.4)	0.0	0.0	0.0
All banks	Sri Lanka	(7.5)	28.0	(2.1)	0.0	0.0	0.0
All banks	Vietnam	(10.4)	20.0	(2.1)	0.0	0.0	0.0
All banks	Armenia	(10.0)	20.0	(2.0)	0.0	0.0	0.0
All banks	Djibouti	(7.9)	25.0	(2.0)	0.0	0.0	0.0
All banks	Chad	(5.7)	24.0	(1.4)	0.0	0.0	0.0
All banks	Kosovo	(5.3)	24.0	(1.3)	0.0	0.0	0.0
All banks	Bolivia	(4.6)	25.0	(1.2)	0.0	0.0	0.0
All banks	Burkina Faso	(3.8)	27.5	(1.0)	0.0	0.0	0.0
All banks	Moldova	(7.7)	12.0	(0.9)	0.0	0.0	0.0
All banks	Gambia	(2.9)	31.0	(0.9)	0.0	0.0	0.0
All banks	Laos	(2.9)	24.0	(0.7)	0.0	0.0	0.0
All banks	Fiji	(3.4)	20.0	(0.7)	0.0	0.0	0.0
All banks	Oman	(4.0)	15.0	(0.6)	0.0	0.0	0.0
All banks	Congo, Republic of	(1.4)	35.0	(0.5)	0.0	0.0	0.0
All banks	Uganda	(1.7)	30.0	(0.5)	0.0	0.0	0.0
All banks	Mali	(2.0)	24.0	(0.5)	0.0	0.0	0.0
All banks	Macedonia, F.Y.R.	(4.8)	10.0	(0.5)	0.0	0.0	0.0
All banks	Montenegro	(1.5)	9.0	(0.1)	0.0	0.0	0.0
All banks	Vanuatu	(0.3)	34.0	(0.1)	0.0	0.0	0.0
All banks	Togo	(0.4)	24.0	(0.1)	0.0	0.0	0.0
All banks	Ecuador	(0.4)	22.0	(0.1)	0.0	0.0	0.0
All banks	Cambodia	(0.4)	20.0	(0.1)	0.0	0.0	0.0
All banks	Saint-Martin, France	(0.2)	34.5	(0.1)	0.0	0.0	0.0
All banks	Liechtenstein	(0.2)	12.5	(0.0)	0.0	0.0	0.0

All banks	Namibia	(0.0)	32.0	(0.0)	0.0	0.0	0.0
All banks	Bahamas	20.2	0.0	0.0	0.0	0.0	0.0
All banks	Bahrain	(5.6)	0.0	0.0	0.0	0.0	0.0
All banks	Bermuda	80.2	0.0	0.0	0.0	0.0	0.0
All banks	Cayman Islands	57.4	0.0	0.0	0.0	0.0	0.0
All banks	Channel Islands	168.9	0.0	0.0	0.0	0.0	0.0
All banks	Guernsey	78.6	0.0	0.0	0.0	0.0	0.0
All banks	Isle of Man	131.8	0.0	0.0	0.0	0.0	0.0
All banks	New Caledonia	27.4	0.0	0.0	0.0	0.0	0.0
All banks	British Virgin Islands	3.6	0.0	0.0	0.0	0.0	0.0
All banks	Kazakhstan	0.2	20.0	0.0	0.0	0.0	0.0
All banks	Angola	0.2	30.0	0.0	0.1	0.0	0.0
All banks	Falkland Islands	0.4	24.0	0.0	0.1	0.0	0.0
All banks	Jordan	0.7	20.0	0.0	0.1	0.0	0.0
All banks	Equatorial Guinea	1.1	24.0	0.0	0.3	0.0	0.0
All banks	Cameroon	0.9	33.0	0.0	0.3	0.0	0.0
All banks	Panama	1.2	25.0	0.0	0.3	0.0	0.0
All banks	Paraguay	4.7	10.0	0.0	0.5	0.0	0.0
All banks	Cyprus	4.0	12.5	0.0	0.5	0.0	0.4
All banks	Ivory Coast	2.0	25.0	0.0	0.5	0.0	0.0
All banks	French Polynesia	2.3	24.0	0.0	0.6	0.0	0.0
All banks	Guinea	2.5	24.0	0.0	0.6	0.0	0.0
All banks	Seychelles	2.6	30.0	0.0	0.8	0.0	0.0
All banks	Madagascar	4.3	20.0	0.0	0.9	0.0	0.0
All banks	Pakistan	4.1	31.0	0.0	1.3	0.0	0.0
All banks	Sierra Leone	4.3	30.0	0.0	1.3	0.0	0.0
All banks	Kuwait	9.9	15.0	0.0	1.5	0.0	0.0
All banks	Iraq	13.3	15.0	0.0	2.0	0.0	0.0
All banks	Nepal	9.7	24.0	0.0	2.3	0.0	0.0
All banks	Zambia	6.8	35.0	0.0	2.4	0.0	0.0
All banks	Maldives	9.9	24.0	0.0	2.4	0.0	0.0
All banks	Lebanon	19.8	15.0	0.0	3.0	0.0	0.0
All banks	Lithuania	27.0	15.0	0.0	4.1	0.0	3.2
All banks	Macao, China	36.5	12.0	0.0	4.4	0.0	0.0
All banks	Israel	20.1	23.0	0.0	4.6	0.0	0.0
All banks	Qatar	52.2	10.0	0.0	5.2	0.0	0.0
All banks	Belarus	29.8	18.0	0.0	5.4	0.0	0.0
All banks	China with HK	26.6	25.0	0.0	6.6	0.0	0.0
All banks	Algeria	26.6	26.0	0.0	6.9	0.0	0.0
All banks	Kenya	30.2	30.0	0.0	9.1	0.0	0.0
All banks	Latvia	48.8	20.0	0.0	9.8	0.0	5.4
All banks	Uruguay	43.7	25.0	0.0	10.9	0.0	0.0
All banks	Brazil	34.5	34.0	0.0	11.7	0.0	0.0
All banks	Nigeria	41.1	30.0	0.0	12.3	0.0	0.0
All banks	Ghana	54.0	25.0	0.0	13.5	0.0	0.0
All banks	Gibraltar	162.1	10.0	0.0	16.2	0.0	0.0
All banks	Singapore	138.4	17.0	0.0	23.5	0.0	0.0
All banks	Colombia	71.4	34.0	0.0	24.3	0.0	0.0
All banks	Estonia	129.7	20.0	0.0	25.9	0.0	18.2
All banks	New Zealand	93.4	28.0	0.0	26.2	0.0	0.0
All banks	Monaco	80.5	33.3	0.0	26.8	0.0	0.0
All banks	Bangladesh	109.8	25.0	0.0	27.4	0.0	0.0
All banks	Slovakia	137.8	21.0	0.0	28.9	0.0	27.6
All banks	Mauritius	216.9	15.0	0.0	32.5	0.0	0.0
All banks	Egypt	174.7	22.5	0.0	39.3	0.0	0.0
All banks	Malta	115.0	35.0	0.0	40.3	0.0	18.4
All banks	Portugal	132.2	31.5	0.0	41.6	0.0	23.8
All banks	Turkey	237.5	22.0	0.0	52.2	0.0	0.0
All banks	Canada	213.3	26.8	0.0	57.2	0.0	0.0
All banks	Peru	223.0	29.5	0.0	65.8	0.0	0.0

All banks	Jersey	365.8	20.0	0.0	73.2	0.0	0.0
All banks	United Arab Emirates	140.7	55.0	0.0	77.4	0.0	0.0
All banks	Saudi Arabia	399.0	20.0	0.0	79.8	0.0	0.0
All banks	Argentina	428.7	30.0	0.0	128.6	0.0	0.0
All banks	Japan	436.0	29.7	0.0	129.5	0.0	0.0
All banks	Australia	466.1	30.0	0.0	139.8	0.0	0.0
All banks	Finland	809.1	20.0	0.0	161.8	0.0	97.1
All banks	Czech Republic	950.6	19.0	0.0	180.6	0.0	142.6
All banks	Chile	826.2	25.0	0.0	206.5	0.0	0.0
All banks	Ireland	1,798.5	12.5	0.0	224.8	0.0	287.8
All banks	Denmark	1,295.0	22.0	0.0	284.9	0.0	246.1
All banks	China, P.R.: Mainland	1,278.7	25.0	0.0	319.7	0.0	0.0
All banks	Norway	1,778.1	23.0	0.0	409.0	0.0	0.0
All banks	Mexico	1,388.4	30.0	0.0	416.5	0.0	0.0
All banks	Belgium	1,593.8	29.6	0.0	471.8	0.0	223.1
All banks	Sweden	3,572.2	22.0	0.0	785.9	0.0	464.4
All banks	Hong Kong, China	5,173.3	16.5	0.0	853.6	0.0	0.0
All banks	Luxembourg	3,370.0	26.0	0.0	876.2	0.0	67.4
	Total	(0.0)		(7,370.1)	6,473.9	(4,793.2)	1,625.3